



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/501,228 | 07/12/2004 | Hidekazu Onoi | AOK-0226 | 3787 |

23353 7590 05/09/2005
RADER FISHMAN & GRAUER PLLC
LION BUILDING
1233 20TH STREET N.W., SUITE 501
WASHINGTON, DC 20036

EXAMINER

CHOI, LING SIU

ART UNIT PAPER NUMBER

1713

DATE MAILED: 05/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/501,228

Applicant(s)

ONOI ET AL.

Examiner

Ling-Siu Choi

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)

DETAILED ACTION

1. Claims 1-6 are now pending, wherein claims 1-5 are drawn to a process to produce a modified polymer; claim 6 is drawn to a modified polymer.

Claim Objections

2. Claim 1 is objected to because of the following informalities: claim 1, line 3, "radical(s) comprising" is suggested to be changed to --radical(s), comprising--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

4. Claims 1-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Ashiura et al. (US 6,653,409 B2).

A process to produce a modified polymer, comprising
reacting a polymer with a compound(s) having the free radical stable at an ordinary
temperature in the presence of oxygen, after or while a **carbon radical(s) is generated
in the polymer**

(summary of claim 1)

Ashiura et al. disclose a radical-modified polymer obtained by a process comprising (a) compounding TEMPO or other compounds having stable free radicals into a rubber composition; (b) forming carbon radicals at the ends of the molecules or in the molecular chains of the rubber by shearing during the processing of the rubber, and (c) trapping the stable free radicals to the resulting carbon radicals to form the radical-modified polymer, wherein TEMPO can be thiirane-TEMPO, isocyanate-TEMPO, epoxy-TEMPO, or imine-TEMPO (abstract; col. 2, lines 34-45; col. 4, lines 50-53). Thus, the present claims are anticipated by the disclosure of Ashiura et al.

5. Claims 1-2 and 4-6 are rejected under 35 U.S.C. 102(e) as being anticipated by Bertin et al. (US 2003/0139536 A1).

Bertin et al. disclose a radical-modified polymer obtained by a process comprising treating a polymer in the presence of a multinitroxide and a free radical initiator, wherein proton is extracted from the polymer and the nitroxide functional groups of the multifunctional nitroxide are grafted to the resulting polymer to form a thermoreversible bonds between the polymer and the oxygen atoms of the nitroxide

functional groups (abstract; [0032]-[0034]; claim 1). Thus, the present claims are anticipated by the disclosure of Bertin et al.

6. Claims 1-2 and 4-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Masayoshi et al. (JP 10182881 A).

Masayoshi et al. disclose a rubber composition obtained by compounding 100 parts by weight of a diene rubber with 0.1-10 parts by weight of a compound containing at least one kind of free radical selected from nitroxyl, hydrazyl, and trityl free radicals, which is stable at normal temperature in the presence of oxygen (abstract). Thus, the present claims are anticipated by the disclosure of Masayoshi et al.

7. Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Veregin et al. (US 5,610,250).

Veregin et al. disclose a radical-modified polymer obtained by a process comprising heating a mixture of a free radical initiator, a stable free radical agent, and at least one polymerizable monomer compound, wherein the stable free radical agent can be TEMPO or PROXYL (abstract; Table 1). Thus, the present claims are anticipated by the disclosure of Veregin et al.

8. Claim 6 is rejected under 35 U.S.C. 102(b) as being anticipated by Onoi et al. (JP 2000212329 A).

Onoi et al. disclose a composition obtained by contacting a diene-based rubber


Art Unit: 1713

with a compound containing nitroxy or trityl radical (abstract). Thus, the present claims are anticipated by the disclosure of Onoi et al.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.


LING-SUI CHOI
PRIMARY EXAMINER

April 28, 2005